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V. *Observations upon the Dissection of an Ostrich, communicated in a Letter to the Publisher, by the Ingenious Mr. George Warren, Surgeon in Cambridge.*

SIR,

I Thought my self obliged to lay before you a few Observations I made in dissecting the Male-Ostrich which died at *Sturbridge-Fair*; tho' indeed, Dr. *Brown* has so well describ'd the Parts of that which he dissected [*Philos. Collect. N<sup>o</sup>. 5.*] that I think, there is not much to be added. I presume, an Ostrich is allow'd now, not only to be a Bird, but a Water-Fowl, and of the Goose-kind: For tho' I believe it does not swim, yet it has Legs long enough to go into deep Waters, and a Neck long enough to dip to the bottom of any Water where it can wade, and a Beak fitly made for the Prey of Fish, as that of a Goose is. Dr. *Brown* affirms it has no *Epiglottis*; but in this Subject that Cartilage was plainly visible; and indeed, the *Rimula* appeared too open not to require one. The *Os Hyoides* is three Inches long from the Basis; the *Musculi Directores Asperæ Arteriæ* were very plain, large and strong; the Ring composed of three Cartilages at the Divarication of the *Asperæ Arteria* very bold; the two Glands on the Carotid Arteries, as large as small Eggs. There was nothing particular in the Lungs or Heart, but what it has in common with other Birds. The two Stomachs, *viz.* the Crop and Gizzard, were filled with half-digested Grass, in which were some Nails, some Stones of the bigness of Walnuts, and about fourteen or fifteen

fifteen Pieces of Silver and Copper-Money. The first Stomach, or Crop was exceedingly tender, and contain'd, cramm'd as it was, between three and four Quarts. The Glands on the top of the Crop were very large and numerous; in the Order describ'd by Dr. *Brown*, and of the Bignels of little *Oculi Cancrorum*, and of a watery-brown Colour; which being so different from the Colour of the Stomach, that added to the pretty Order they are placed in, makes 'em very remarkable. The Crop lay within the *Thorax*, but so that the Gizzard lay higher. The Looseness and Likeness to Flannel, of the inner Coat of the Gizzard, mentioned by Dr. *Brown*, was very remarkable in this Bird; but the Texture in the Muscular Part of it did not seem proportionably strong to that in other Birds, being broader, thinner, and more flaccid. The Guts, as near as I could measure them, were about twenty six Yards long. The two *Cæcums*, which are about thirty four Inches long each, and which have beautiful spiral Valves, were Appendages of the very Beginning of the *Colon*. The Testicles lay as in other Fowls, very high, and less than Pidgeons Eggs, but longer. I found the Liver to have four Lobes, and thought I had met with a Gall-Bladder, but it appear'd at last to be only the Membrane of the Liver rais'd by some Accident from its inner Substance. The Gland under the Stomach, which Dr. *Brown* supposes to be the Spleen, and the *Pancreas* and Kidneys answer his Description; and the Ureters were, as he says, firm, strong, white, long, and opening into the *Rectum*. The Eye is said to be exactly like the Human Eye; but is indeed, a perfect Goose-Eye for its Colour, and, I believe, for the rest of its Parts, as they are well described by Mr. *Ranby*: It was flatter than the Human Eye, as, I believe, all Birds are; and it had that simple Look so peculiar to the Goose.

**Goose.** The Bony Circle describ'd by Mr. *Ranby*, this Bird has in common with other Fowls both of the Water and Land, with this difference only, that the Ring in Water-Fowls consists of fifteen, and in Land-Fowls but of fourteen Bones. They are so dispos'd, that one Bone lies over the Ends of two others, then three or four lie over one another, like the Scales of Fish; then one Bone lies under the Ends of two others; and then two or three more follow again like the Scales of Fish: But unless there be a *Lusus Naturæ*, I think Mr. *Ranby's Icon* does not express it so very justly, as I believe it might be done. There was no *Musculus suspensorius Oculi* in this Animal, nor do I believe it is to be found among Birds, and indeed there seems to be no reason for it.

The Crop was so stuff'd with Grâss, or other Greens (proper Food for a Goose, or one of that Kind) that I don't think the Bird could have digested it off, if there had been no other reason for its Death. The Gizzard was not so stuff'd as the Crop, and what was therein, seem'd undigested. The Guts contain'd a thick deep-green Juice, even to the *Cloaca*. The Money both of Silver and Copper in the Gizzard was very remarkably worn away; the Edges, in particular, were made round, and the Bust and Reverse scarce perceptible in some Pieces, and quite obliterated in others. The *Ærugo* and *Sulci* in many of the Pieces would make one believe (that besides the Attrition) there may be a *Menstruum* in their Gizzards not unfit to dissolve Metals. Within an Inch of the End of the *Rectum* was the *Cloaca*, or Expansion of that great Gut, which was thinner than the other Part of the Gut, in proportion to its Expansion, and would hold above half a Pint. The End of the *Rectum* (from the *Cloaca*) open'd into a Cavity big enough to hold my two Fists; and for want of another

other Name, I will call it the *Receptaculum Penis*, because therein the *Penis* was always lodged when flaccid. I know, that Part is called by Dr. *Brown*, a kind of *Præpuce*; but upon Dissection, it appeared plain enough to me to be a very strong Muscle compos'd of circular Fibres, and to be designed for a *Sphincter* of that Part wherein the *Penis* was to be lodg'd, and to be a *Sphincter* of the *Rectum* too; round which I traced the same Muscle above an Inch; and this being but one Muscle, must be the reason that the *Penis* always came out some Inches when it muted, as they told me it did. The *Penis*, flaccid as it is, is five Inches and an half long from the Skin of that *Receptaculum*, and, as Dr. *Harvey* says, not unlike an Hart's Tongue. I don't find a Cartilage in it, as Dr. *Brown* suggests; but at its Origination it is so hard a Body, that, I believe, if the Bird had liv'd some Years, it possibly might have become Cartilaginous. There are two Bodies that are join'd to the *Crura Penis*, which I suspect to be the *Vesiculæ seminales*; and the more, because there are two Vessels enter them, which I believe to be the *Vasa Diferentia*; but of this I am not certain: For tho' I found *Semen* in the *Urethra*, I have not been able to trace a Passage from these supposed *Vesiculæ seminales*, or those Vessels, or any other Part into the *Urethra*. I call it *Urethra*, because there is no other Term fix'd that I know of, tho' the Urine does not pass that way; but, as in other Birds, is mix'd with the grosser Excrements in the *Cloaca*. The *Urethra* then, is only a *Sulcus*, or Gutter, from one end of the *Penis* to the other; which *Sulcus*, as the *Penis* lies flaccid in the *Receptaculum*, as I venture to call it, lies on one side; but upon Erection, the *Penis* turns towards the Belly, and the *Sulcus* is then at the Top, and lies conveniently enough for Conveyance of the *Semen*. If those two Bodies are not the *Vesiculæ seminales* (as I mention'd before) they must

must be Elongations of the *Crura Penis*; but I think, they are of much too loose a Contexture to serve that purpose. Whether the *Vena Cava*, dividing into two Branches to go into the Kidneys, and uniting again when it comes out, is singular to this Bird, or is in common with Geese and other Water-Fowl, I don't yet know; but so it was in the Ostrich. I will suppose it to be in common, till I have examin'd further, since I know, that the *Cæcums* of the Ostrich, which are so much taken notice of, are no more than what it has in common with other Fowls; and that a Chicken has two, as large, and as long in proportion as the Ostrich: But after all, I must say, I had too little time allow'd me by the Master of the Ostrich, and the Ostrich had too much Fat for me to make a more accurate Dissection. Now I have mentioned the Fat, I must tell you, the *Omentum* upon the Stomachs and Guts was six Inches thick at the Top, and decreasing gradually, was near two Inches thick at the Vent, and was divided into two Parts in the Middle from the Top to the Bottom. What I found, that I was sure was in common with other Fowls, I have not taken much notice of, unless represented by others differently from what I found, or so as if peculiar to this Bird. I forgot to take notice, that the Basis of the *Os Hyoïdes* is of this Figure  and the round Part at the Top is lodg'd in a proper Cavity in the top of the Tongue. Partly under the Basis of the *Os Hyoïdes*, lies a Cartilage in the Front and very beginning of the *Aspera Arteria*, which is not unlike the *Thyroïdes*; but other Cartilages in that Part it has none, but what forms the *Rimula*. The first 28 Cartilages of the *Aspera Arteria* are not annular, the rest (being about 226) are entirely annular; but as soon as it divaricates to go into the Lungs, they are not so again.

Cambridge,  
Oct. 17, 1725.

I am, &c.

G. WARREN.